Feb. 28, 1939. H. I NICHOLAS 2,148,872

SWITCH DEVICE

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Fig. 2.

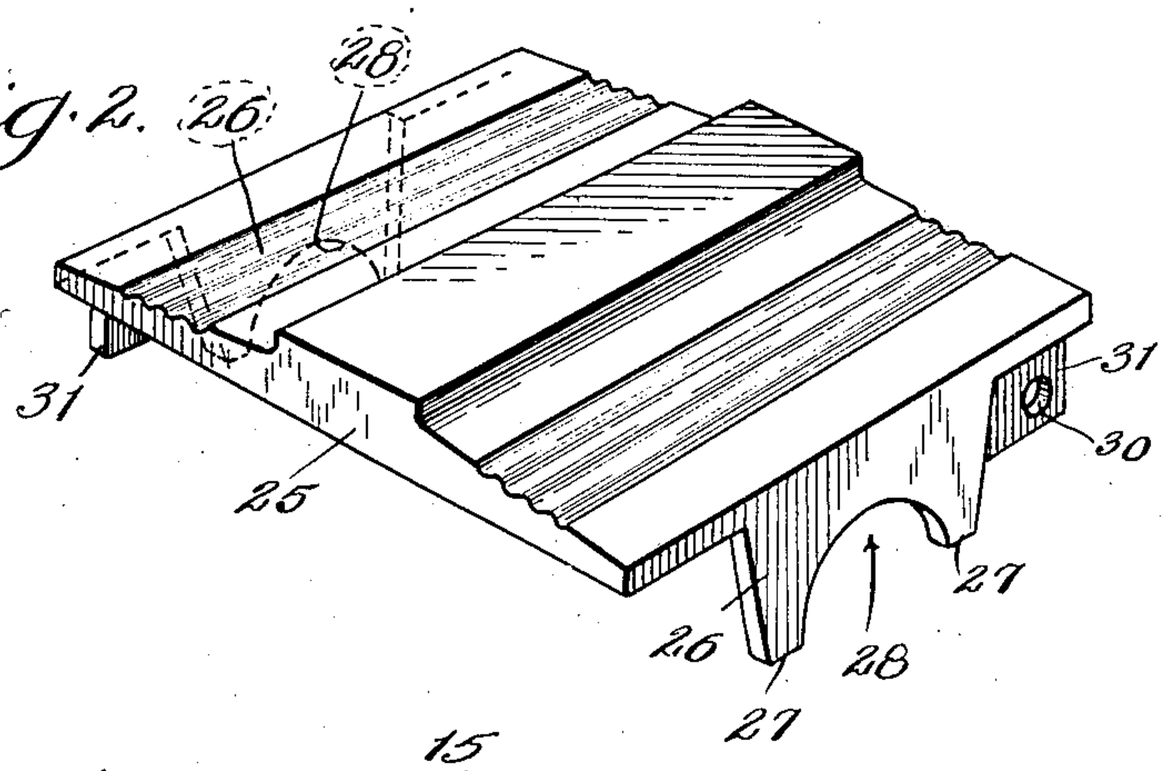

Fig. 1.

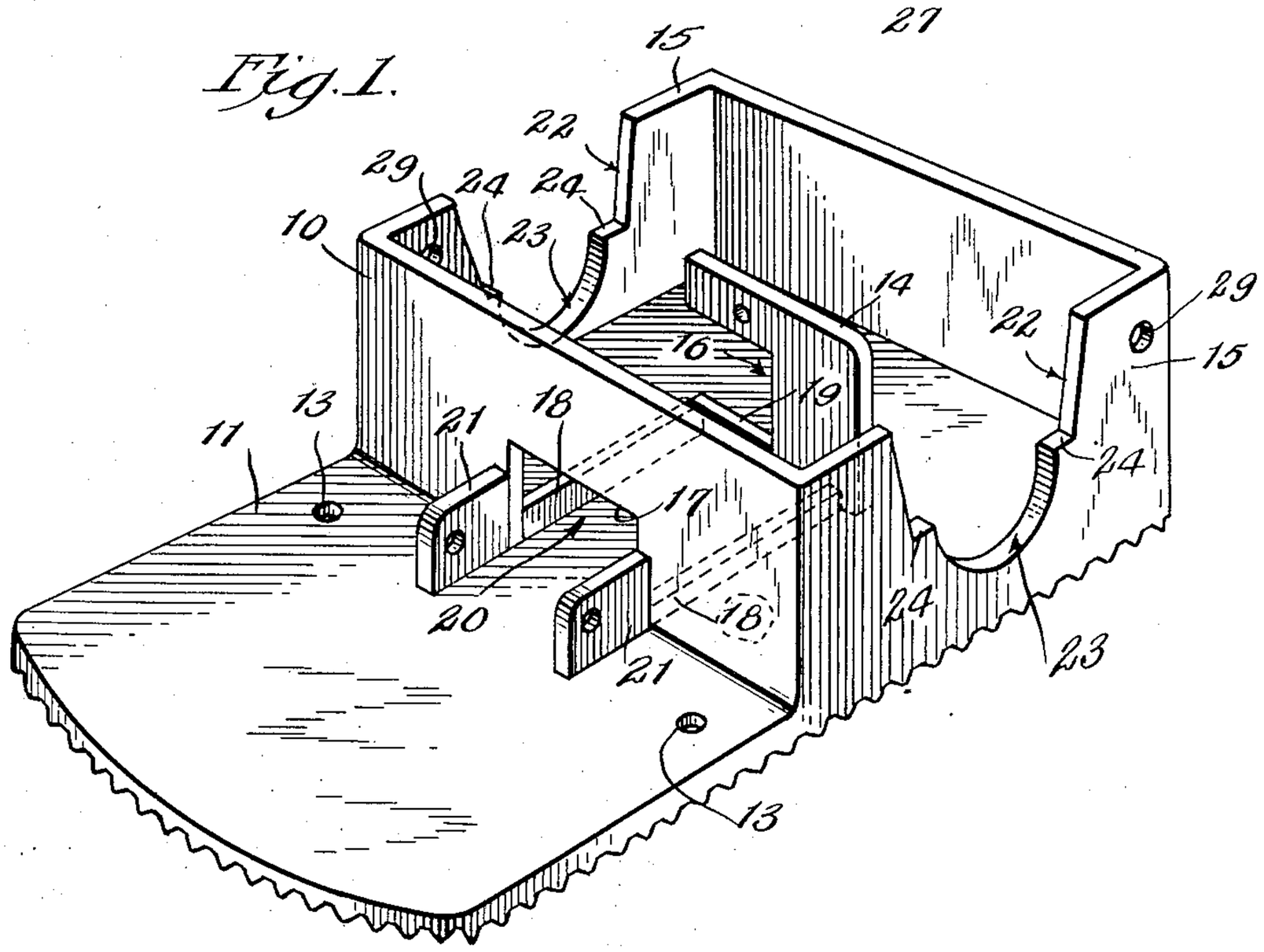

Fig. 7.

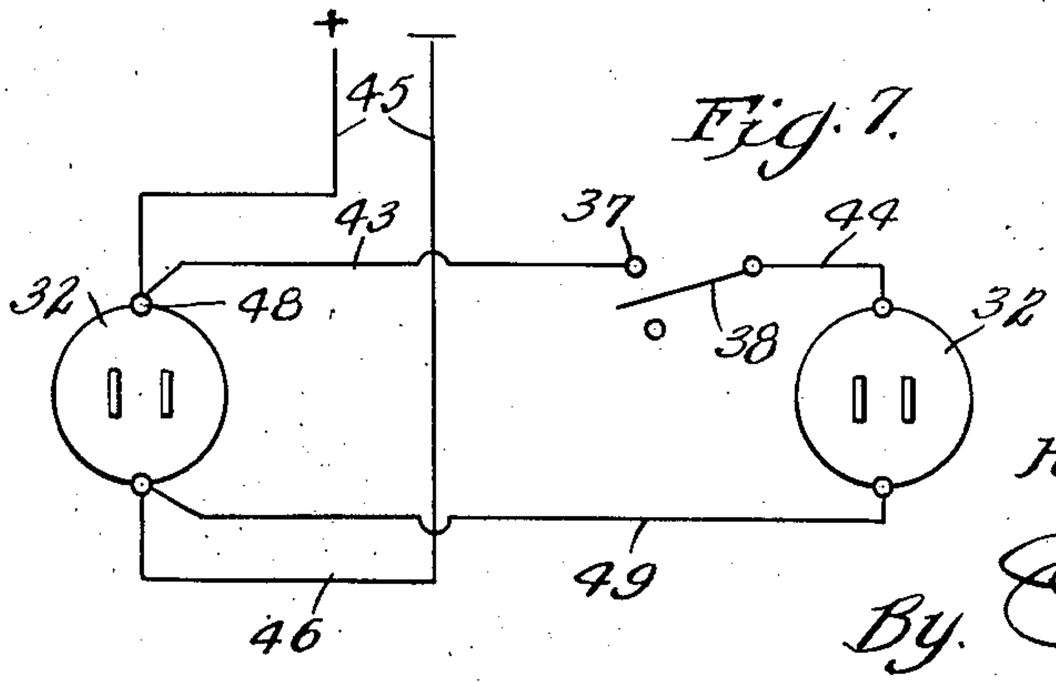

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Fig. 3.

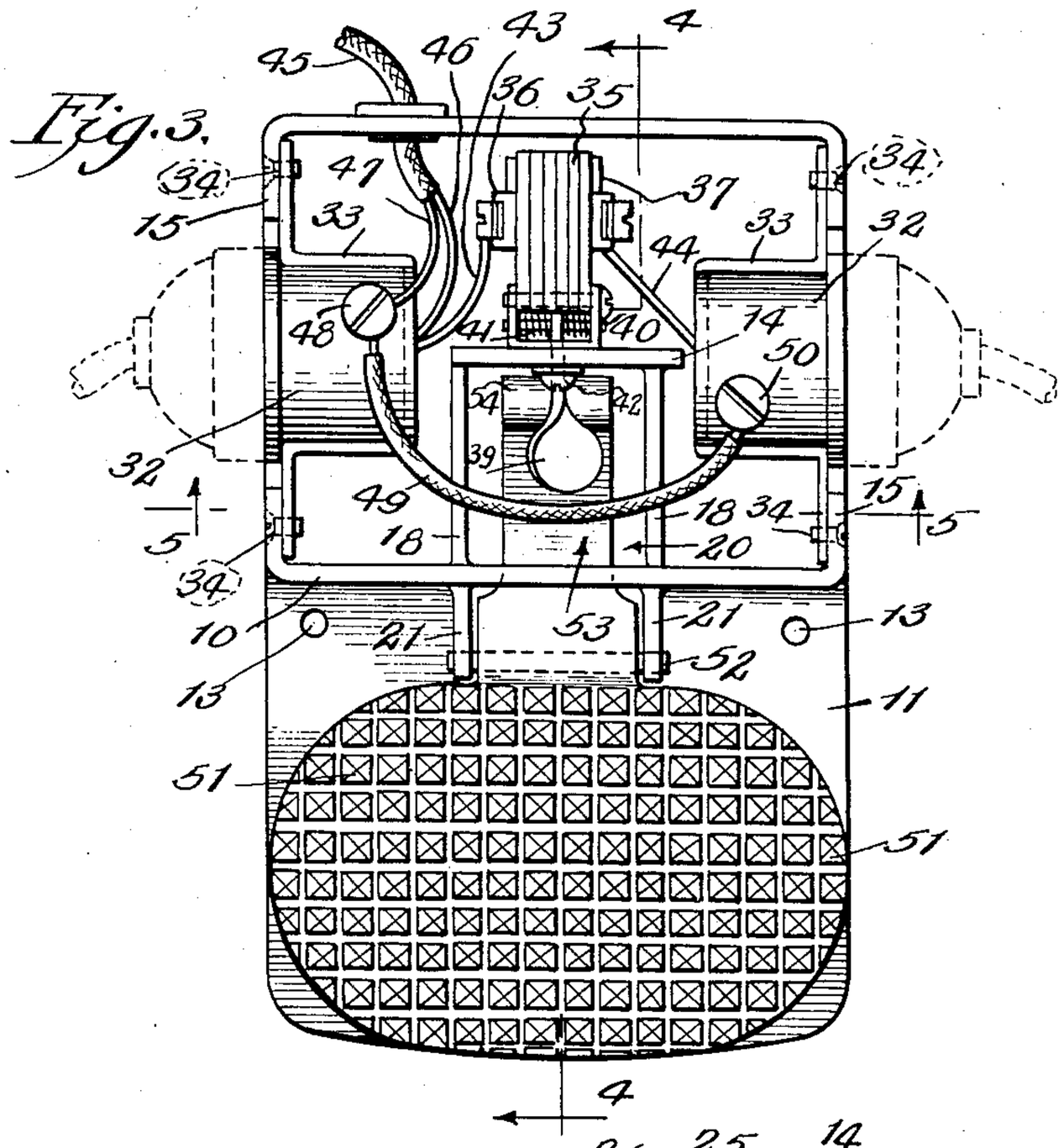


Fig. 4.

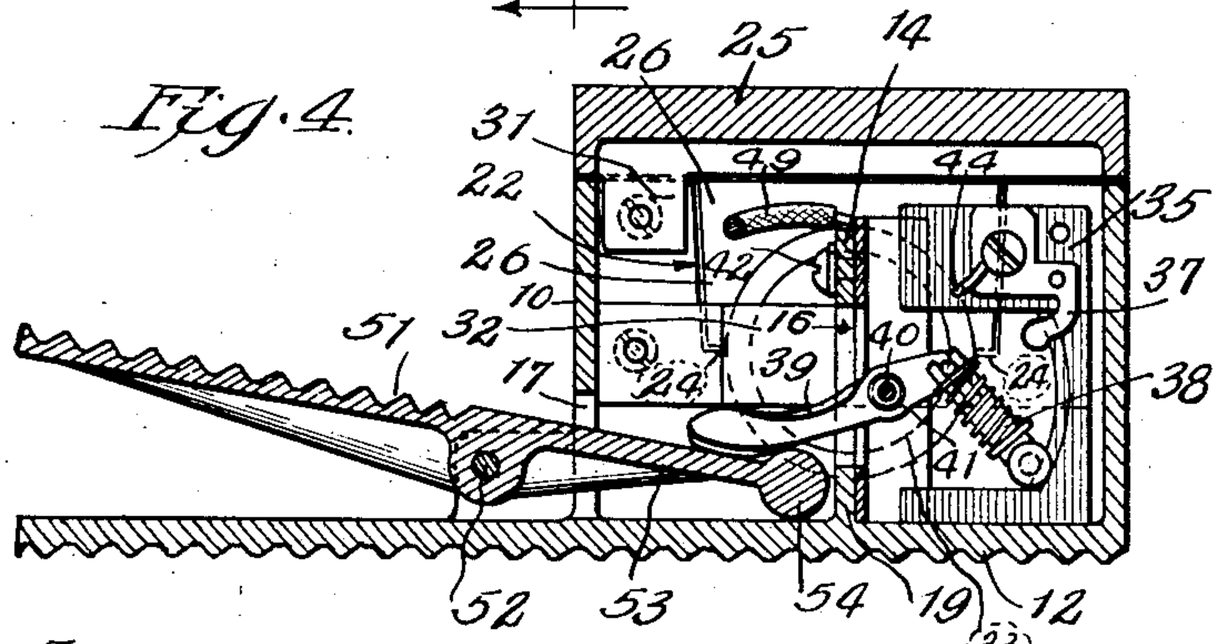


Fig. 5.

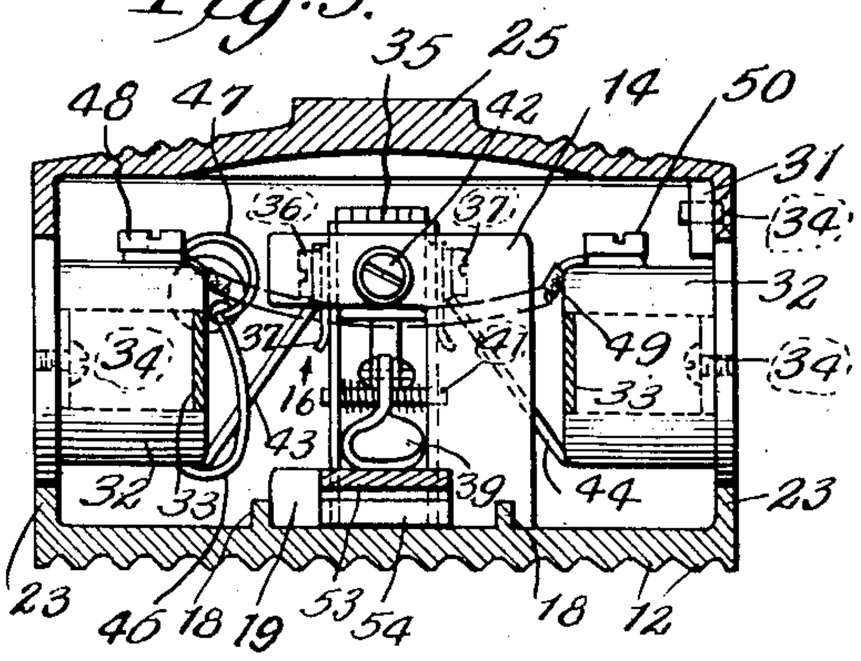
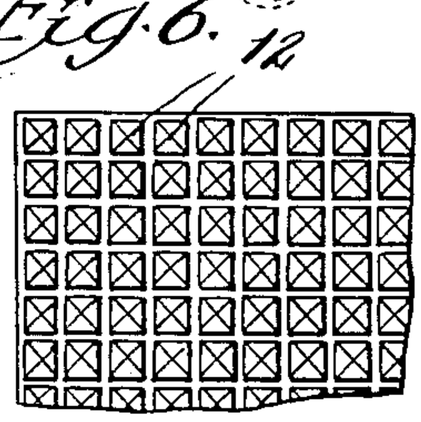


Fig. 6.



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UNITED STATES PATENT OFFICE

2,148,872

SWITCH DEVICE

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Application May 22, 1937, Serial No. 144,237

4 Claims. (Cl. 200—52)

This invention relates to improvements in switch devices particularly adapted, though not necessarily limited to that use, for instant control of an apparatus in connection with general photography, flood light, and other machinery with which it is used, and one of the objects of the invention is to provide an improved switch of this character for use in conjunction with a pilot light, the switch embodying a plurality of plug sockets, one of which is used in conjunction with the pilot light, the switch operating to cause a supply of current to be delivered to the other socket and to cut off the supply therefrom, while the supply to the pilot light socket remains constant, this being preferably accomplished by arranging the sockets in parallel.

A further object is to provide an improved switch of this character embodying a casing formed preferably of cast material, so shaped that the switch mechanism and plug sockets may be readily encased therein without the necessity of machining or finishing the parts, thereby not only reducing the cost of production but also the cost of assembling.

A further object is to provide improved means for preventing water or liquid from flowing into the casing and contacting the terminals.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawings illustrating this invention, and in which

Figure 1 is a perspective view of the casing with all of the mechanism removed and with the top separated therefrom.

Figure 2 is a detail perspective view of the top of the casing.

Figure 3 is a top plan view of the casing and the switch mechanism assembled and with the top of the casing removed.

Figure 4 is a longitudinal sectional view taken on line 4—4 Figure 3.

Figure 5 is a transverse sectional view taken on line 5—5 Figure 3.

Figure 6 is a detail plan view of a portion of the lower face of the bottom of the casing.

Figure 7 is a wiring diagram.

Referring more particularly to the drawings, the numeral 10 designates generally an open casing or housing provided with a base 11 which projects for a considerable distance beyond one of the walls of the casing. These parts may be of any desired size and configuration and constructed of any suitable material and the lower face of the bottom of the casing and of the extension 11 is preferably roughened or serrated as at 12 to provide separated projections which bite into the floor to assist in maintaining the casing against movement upon its support.

If desired, the casing may be anchored to the floor or to its support by means of screws or bolts passing through suitable openings 13.

Within the casing 10 is arranged an upright partition 14 which terminates short of the top of the casing and is spaced from the end walls 15, the partition 14 being disposed preferably in the center of the casing and also spaced from the side walls thereof. A portion of this partition 14 is cut away as at 16, for a purpose to be described, and an opening 17 in alinement with such cut away portion 16 is provided in one of the walls 10 of the casing.

Spaced upright ribs or projections 18 are provided on the base of the casing and extend from the inner face of the front wall of the casing to the partition 14 and are laterally spaced from each other. A rib or projection 19 is also provided on the bottom of the casing intermediate the ribs or projections 18, and co-operates with the base of the partition 14 to form an open recess 20 which has communication with the opening 17 in the wall 10 of the casing. On the outside of the wall 10 and adjacent the opposite ends of the opening 17 are projections 21 provided for a purpose to be described.

The end walls 15 of the casing are provided with recesses 22 opening through the top of the walls and are preferably formed by cut away portions in the wall. The lower base of these cut away portions 22 are preferably of a semicircular configuration of a diameter less than the width of the opening 22 to provide shoulders 24 on each side of the portions 23.

The top 25 of the casing is of a configuration to conform to the contour of the casing and is provided with depending flanges 26 at the opposite ends thereof. These flanges 26 are of a configuration to fit within the cut away portions 22 in the walls 15 of the casing and the extremities 27 of the flanges are adapted to engage and rest upon the shoulders 24. A semi-circular recess 28 is provided in the lower extremity of each of the flanges 26 and these recesses 28, when the cover is in position on the casing, co-operate with the portions 23 in the casing walls to form bearings or seats, for a purpose to be described.

When the cover is in place on the casing it

may be secured against removal by means of suitable fastening bolts or screws passing through openings 29 in the end walls 15 of the casing and into openings 30 in flanges 31 on the cover 25, and which flanges 31 are adapted to stand within the casing and in proximity to the adjacent wall.

The numeral 32 designates plug sockets of the ordinary and usual construction and these sockets are adapted to be seated respectively in the seats 23 in the end walls 15 of the casing and when the cover is in position, the sockets will also project into the open recesses 28 in the flanges 26. It will therefore be apparent that it is not necessary to machine these parts to make them fit as the sockets will be readily seated in the recesses 23. If desired, and in order to maintain the sockets against displacement when the cover 25 is removed, anchor members 33 preferably in the form of straps are secured to the respective sockets and the ends of these straps or anchors are secured by means of fastening bolts 34 passing through the casing wall and engaging the anchors.

Arranged within the casing and preferably intermediate the sockets 32 is a switch device proper, which may be of any desired or suitable construction, suffice it to say that it is a snap switch and embodies a body portion 35 to which terminals 36—37 are secured. A contact member 38 co-operates with the terminals 36—37 to open and close the circuit as is usual in switches of this character.

A switch arm 39 is pivotally mounted intermediate its ends as at 40 and one or more coil springs 41 co-operates with the switch arm 39 tending normally to move it in one direction, that is, in a direction to cause the contact member 38 to move out of engagement with the terminals 36—37 and thereby interrupt the circuit.

All of the parts of the switch proper are mounted upon the body portion 35 as a unitary structure and this switch proper is placed in the casing in a position that the body portion 35 may be anchored or secured to the partition 14 in any suitable manner, such as by means of screws or bolts 42.

The switch arm 39 extends to the other side of the partition 14 through the cut away portion 16 of the partition and the extremity of the switch arm is disposed to project above the recess or channel 20 in the casing.

The terminal 36 of the switch is connected by means of a conductor 43 to one side of one of the sockets 32, while the terminal 37 is connected by means of a conductor 44 to one side of the other socket 32.

The line 45 is connected by means of the conductor 46 to the same terminal and side of the socket 32 to which the conductor 43 is connected, while the conductor 47 of the line is connected to the terminal 48 on the other side of one of the sockets 32.

The sockets 32 are connected by means of a conductor 49, one end of which is secured to the terminal 48 while its other end is secured to the terminal 50 of the other socket 32.

Thus it will be seen that, assuming the switch to be open and in the position shown in Figure 4 and in the wiring diagram in Figure 7, the current from the line will flow only through one of the sockets 32 because the open switch is arranged in the connection between the line and the other socket 32. Therefore, while the switch is open the current will only flow through one of the sockets 32. When, however, the switch is operated to close the circuit from the line to the other socket 32, the current will flow through both of the sockets, but when the switch is again opened, the current will flow only through one of the sockets.

Thus it will be seen that the switch will interrupt the circuit through one of the sockets while the flow of the current through the other socket will remain constant.

The numeral 51 indicates a treadle or manually operated device which may be of any desired size and configuration and is pivotally supported intermediate its ends as at 52. This treadle 51 is provided with a foot engaging portion and a reduced portion 53, the latter preferably terminating in an enlarged portion 54. The treadle is pivotally mounted between the ears or projections 21, and the reduced portion 53 extends through the openings 17 in the wall 10 and projects into the recess or channel 20 and beneath the free end of the switch arm or lever 39. The springs 41 tend normally to move the switch arm in a direction to depress the extremity 54 of the treadle and raise the outer extremity.

With this construction it will be manifest that the switch arm 39 will be operated by depressing the free end of the treadle 51, such as by stepping upon the same. This will raise the end 54 and will rock the switch arm 39 to cause the contact member 38 to snap to engage the terminals 36—37, the switch arm being moved against the stress of the springs 41. As soon as the foot or pressure is relieved from the free end of the treadle the springs 41 forcing the free end of the switch arm downwardly will depress the free end 54 of the treadle 51 and raise the outer extremity. In other words, when the treadle 51 is depressed the switch arm will be actuated to close the switch. When pressure is relieved from the treadle the springs 41 wil operate to open the switch and raise the free end of the treadle.

During the operation of this mechanism and as before stated, the current will flow continuously through one of the sockets 32 but will only flow through the other socket 32 when the switch is closed. In other words, with this improved device the activity of the sockets may be selectively controlled, that is, both may be simultaneously maintained active or one of the sockets may be constantly maintained active and the other intermittently maintained active at the will of the operator.

The upper surface of the treadle may be serrated or roughened if desired.

By the provision of the channel or recess 20, it will be manifest that any liquid which might fall upon the switch casing and flow through the opening 17, will be trapped or confined within the recess or channel 20, and this will prevent the liquid from contacting with any of the electrical connections which might tend to short circuit the same. With this improved apparatus it will be manifest that a simple and durable construction will be produced and that by reason of the fact that the casing may be cast, and being so shaped that it is not necessary to machine or otherwise finish any of the parts to receive the various elements of the device, a comparatively cheap product will be produced, and the cost of manufacture will be materially reduced. At the same time the parts are readily accessible and any of the parts may be readily removed without dismantling the entire mechanism.

While the preferred form of the invention has

been herein shown and described, it is to be understood that various changes may be made in the details of construction and in the combination and arrangement of the several parts, within the scope of the claims, without departing from the spirit of this invention.

What is claimed as new is:—

1. A switch casing embodying a chamber having an open top, plug socket receiving recesses opening through the tops of opposite walls of the chamber and provided with open seats at the bottoms thereof, an upright partition in the chamber spaced from the walls of the chamber which are intermediate the recessed walls, the base of the chamber extending beyond the outer face of one of said walls, there being an opening in the last said wall adjacent said base, a closure for the chamber, and flanges depending from said closure, adapted to enter and form closures for said recesses, and shoulders in said recesses against which portions of the extremities of the respective flanges rest, there being open recesses in the lower ends of said flanges cooperating with the open seats in said recesses for holding plug sockets.

2. A switch casing embodying a chamber having an open top, plug socket receiving recesses opening through the tops of opposite walls of the chamber and provided with open seats at the bottoms thereof, an upright partition in the chamber spaced from the walls of the chamber which are intermediate the recessed walls, the base of the chamber extending beyond the outer face of one of said walls, there being an opening in the last said wall adjacent said base, a closure for the chamber, and flanges depending from said closure, adapted to enter and form closures for said recesses, and shoulders in said recesses against which portions of the extremities of the respective flanges rest, there being open recesses in the lower ends of said flanges cooperating with the open seats in said recesses for holding plug sockets, the lower face of said base being roughened to maintain the casing against slipping upon a support.

3. A switch casing embodying a chamber having an open top, plug socket receiving recesses opening through the tops of opposite walls of the chamber and provided with open seats at the bottoms thereof, an upright partition in the chamber spaced from those walls of the chamber which are intermediate the recessed walls, there being an opening through said partition and also through one of the said intermediate walls in alinement with the opening in the said partition, a switch arm extending through the opening in said partition and terminating in the space between the partition and the said intermediate wall which is provided with the said opening, and a treadle pivotally mounted intermediate its ends, one end of the treadle extending through the opening in said intermediate wall and terminating beneath the adjacent end of said switch arm.

4. A switch casing embodying a chamber having an open top, plug socket receiving recesses opening through the tops of opposite walls of the chamber and provided with open seats at the bottoms thereof, an upright partition in the chamber spaced from those walls of the chamber which are intermediate the recessed walls, there being an opening through said partition and also through one of the said intermediate walls in alinement with the opening in the said partition, the bottom of said chamber extending for a substantial distance beyond the last said wall, a switch arm extending through the opening in said partition and terminating in the space between the partition and the said intermediate wall which is provided with the said opening, and a treadle pivotally mounted intermediate its ends upon the extended portion of said bottom, one end of the treadle extending through the opening in said intermediate wall and terminating beneath the adjacent end of said switch arm.

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